

06/07/04 Yaron Mayer

4/22

**Amended CLAIMS**

I claim:

1. (Original) A System for improving the efficiency, comfort, and/or reliability in Operating Systems, comprising at least one of:
 - a. A mechanism for instant Resetting of the OS into the normal state it would be in after a successful boot, without the need to boot at all.
 - b. A mechanism for automatically scanning the nonvolatile memory in the background without significantly slowing down the computer after a boot or a Reset while allowing the user to immediately start working after the boot or Reset.
 - c. A mechanism for preventing other programs from snatching the focus while the user is typing.
 - d. A mechanism for allowing the user to install a new Operating System in another partition or directory with copying the desktop of the original system to the new system and automatically converting as many programs as possible to work in the new system.
 - e. An automatic rollback feature that is adapted to enable undoing any changes on the non-volatile memory.
 - f. Independent access mechanisms to at least one rollback area, so as not to adversely affect speed of access to the normal data areas.
 - g. Independent access mechanisms to at least one FAT area, so as not to adversely affect speed of access to the normal data areas.
2. (Currently amended) The system of claim 1 wherein at least one of the following features exists:
 - a. aAn Image of the state of the OS is saved immediately after a successful boot on non-volatile memory and is automatically updated when new drivers and/or software that changes the state after a boot is added.

06/07/04 Yaron Mayer

5/22

b. More than one image of the state of the OS is saved immediately after a successful boot on non-volatile memory, so that the system can go back also to the previous Image when needed.

3. (Canceled).

4. (Currently amended) The system of claim 1 wherein whenever the system gets stuck and/or the user wants to clear the computer's memory and go back to a state like after a normal boot the user can cause the computer's memory to instantly Reset from the saved Image, without a need to go through a boot sequence at all, and for activating said Reset, the user's request is sensed by at least one of: Hardware, and Some process that runs below the Operating system and thus in not affected even when the system becomes stuck.

5. (Canceled).

6. (Original) The system of claim 2 wherein at least one of the following features exist:

- a. Any cut & paste buffers are automatically saved also on the disk or other non-volatile memory, so that they can be immediately available on the next boot or after the next Reset.
- b. Any currently edited files or windows are automatically saved on the disk or other non-volatile memory after sufficient minimal changes have accumulated, so that they can be immediately available on the next boot or after the next Reset.
- c. After a fast-boot or Reset that uses the memory Image, and/or even during or after a normal boot, if the FAT of the disks or other non-volatile memory needs to be checked, it is done in the background and without significantly slowing down the disk or the CPU, after the user can already start working.

06/07/04 Yaron Mayer

6/22

- d. The disk or other non-volatile memory scanning software is backed up by hardware, by using special area or areas dedicated for FAT information, and independent access means are used for read and write in those areas.
 - e. Any reading or writing of files is done with the aid of using separate access means to access the FAT area or areas.
7. (Original) The system of claim 1 wherein when the user is in the middle of typing something, the focus can be automatically snatched away by another program only under at least one of the following limitations:
- a. The change of focus can occur only after the user has stopped typing for a certain minimal period.
 - b. The focus can be snatch by other programs only in case of emergency.
 - c. The focus can be snatched by other programs only in case of emergency, and such emergency can be decided only by at least one of: The OS, the security system of the computer, the firewall, and any other software which has been given explicit permission by the user to have such rights.
 - d. Programs are not allowed to snatch away the focus while the user is in the middle of typing something, but in case of emergency, instead of snatching away the focus, important messages can be displayed by flashing a message and/or other conspicuous visual means and/or by audible sound, so that the user's attention can be immediately grabbed, without automatically disturbing his typing efforts.
 - e. If the focus is snatched while the user was typing, his keystrokes continue to be kept in a buffer, so that when the user notices that the focus has changed and goes back to the original window where he was typing, the keys that he typed while the focus has changed are again available.

06/07/04 Yaron Mayer

7/22

8. (Original) The system of claim 1 wherein when installing a new OS in a new directory or partition, the new system copies the desktop configuration and links from the old system into the desktop of the new system, and at least one of the following is done in order to enable the links in the new desktop to work in the new OS:

- a. During installation of the new system, the system tries to automatically convert components that are different between the two systems to work on the new system.
- b. During installation of the new system, the system tries to locate the original files which were used for the installation and then tries to reinstall automatically the correct drivers or components that are needed for the new system.
- c. Each Windows system keeps information about the path and name of the original file from which it was installed in at least one of: The registry, and At least one directory where the installed program or component or drivers resides.
- d. If the system does not success in converting the relevant links to work on the new system, then the system does at least one of the following:
 1. The system marks the relevant links on the new desktop as non-operational and encourages the user to look for other versions of those programs that are fitted to work on the new system, and
 2. The system allows the link to activate the version that runs under the old system or creates another copy of it, and uses emulation of the old system when needed in order to let it run
- e. A new protocol for installing programs is implemented so that each installation of new software installs both the appropriate drivers or components and at least one set of alternate drivers or components for additional OS, and each time the program is loaded into memory the appropriate set of drivers or components is automatically chosen by the OS, and the parts of the installation that require updating registries and/or installing various components in system directories are

06/07/04 Yaron Mayer

8/22

suspended and are executed automatically when the new OS is activated for the first time.

9. (Canceled).

10. (Currently amended) The system of claim 1 wherein changes that happen on at least one of the hard disk, other non-volatile fast access memory, and other connected writeble media - are completely undo-able at least for a certain time period or as long as there is sufficient room for saving the info needed for the undo, by using at least one hardware supported rollback area, and the undo feature is accomplished by at least one of the following features:

- a. At least one rollback buffer is kept and is encrypted and is highly guarded and/or is kept also in more than one place.
- b. Even commands such as format or re-partition or even low-level format are not able to destroy the at least one rollback area, so at least a certain percent of the non-volatile memory is always reserved for the rollback info.
- c. The rollback logs or at least the most recent changes in them are always backed up in at least two or more separate places and/or also protected by additional encryption and/or redundancy data, so that damages can be fixed.
- d. Only an explicit command by the user entered directly by the user to the operating system through a direct command can restore changes from the rollback, so no malicious program can activate the command.
- e. When the user requests to restore things from the rollback, the log is still kept, so that the user can also redo the "undo" by simply moving again forward on the rollback log, thus reinserting the cancelled changes, and new changes to the rollback from that point on are kept on a separate part or buffer or branch, so that making additional

06/07/04 Yaron Mayer

9/22

changes from that point on will not overwrite the original "forward" part of the rollback

- f. When going again forwards the user is shown the various branches that exist and can choose the appropriate one.
- g. The rollback file or files use one or more circular buffers, so when it is full the oldest changes logged are deleted by overwriting them with the new data, and pointers to the logical beginning and end of each circular buffer are updated accordingly.
- h. If the hard disk senses that the boot was not made from it, it will block all further changes after the log file becomes too full, and request the user to boot from the hard disk.
- i. There are two types of low-level write commands, one with rollback enabled and one without, so that the rollback enabled write is used for important data and the normal write is used for at least one of unimportant data, temporary file areas and swap file areas.
- j. At least one of the operating system and the computer's security system decide when to use the rollback enabled write and when to use the normal write.
- k. If a malicious program tries to create suspicious massive changes on purpose in order to fill the rollback buffer, it is intercepted as highly suspicious behavior.

11.(Original) The system of claim 10 wherein the hardware supported undo can be used also for each file separately, by at least one of:

- a. Saving a separate rollback buffer or entry for each file.
- b. Each log entry contains also the name and full path of the relevant file, so that the user can choose if to use an "undo" on the entire disk or only on a specific file or directory or group of files or group of directories.

06/07/04 Yaron Mayer

10/22

- c. Said path info changes only when the changes start referring to a separate file, so as long as the changes are in one file, no overhead of repeating the path is needed.

12. (Canceled).

13. (Currently amended) The system ~~claim 12~~ of claim 1 wherein at least one separate FAT area on the non-volatile memory is used with independent access that does not slow down access to normal data areas and wherein at least one of the following features exists:

- a. Said non-volatile memory is at least one hard disk and said independent access is based on at least one independent read/write head for accessing the at least one separate FAT area.
- b. Said non-volatile memory is Magnetic RAM and said independent access is based on at least one of independent communication channel, and independent processor.
- c. Said non-volatile memory is at least one of writeable or rewriteable CDs or DVDs and at least two separate laser beams are used – at least one for the normal data and at least one for the at least one special FAT area.

14. (Original) The system of claim 1 wherein at least one of separate FAT area access and separate Rollback area access are enabled, by at least one of:

- a. Using a separate access to the at least one separate rollback area and a different separate access to the at least one separate FAT area.
- b. Using the same at least one special area with special access for both the rollback and the FAT.
- c. The disks or other non-volatile memory contain also one or more processors that can themselves conduct the comparison between the

06/07/04 Yaron Mayer

11/22

files and the FAT, so that it can be done in the background even with little or no consuming of CPU resources from the computer itself.

15-28 (Canceled).

29. (Currently amended) The system of claim 1 wherein at least one of the following features exists:

- a. Any changes in the entire hard disk or other types of ~~preferably~~ fast mass storage non-volatile memory after or during installation of new software, are completely undo-able at least for a certain time period by using a rollback buffer.
- b. Each program or each installation directory has by default only up to a certain percent of the rollback areas allocate to it, so that it cannot take up too much of the rollback resources unless given explicit permission by the user.
- c. Any changes in the entire hard disk or other types of ~~preferably~~ fast mass storage non-volatile memory after or during installation of new software, are completely undo-able at least for a certain time period by using a rollback buffer.
- d. The "copy" command is extended so that multiple destinations can be used, so that for example copy "bet*.doc 1: n:" will copy all the relevant files to both destination drives/directories.
- e. The system runs a minimal scandisk in advance at most only on the area where the image itself is stored or does that only if there is some CRC problem when trying to get the image, since only that area might have to be scanned before the boot or Reset if there is a problem.

30-32 (Canceled).

06/07/04 Yaron Mayer

12/22

33. (Currently amended) The system of claim 1 wherein at least one of the following features exist regarding priority of processes:

- a. The user can easily define the desired priority level for a processes by clicking on the place where the priority is indicated at or near the taskbar and/or on the window of the process, by at least one of: Defining percentages, Increasing or decreasing some default values in discrete steps, and Using more general definitions, such as "Very high, high, medium, low, very low".
- b. The OS indicates to the user clearly the priority level of each process, at or near the task bar and/or at the top line of the window of the process, by at least one of: Colors, numeric values, textual values, and appropriate icons, the level of priority that has been given to each process, by indicating it near or on each square in the taskbar that shows active processes or elsewhere.
- c. The OS remembers the priorities given by the user to various processes and uses these defaults or at least takes them into consideration for assigning automatically the priorities the next time the user does similar things or activates the same processes, unless the user again changes the priorities.
- d. The taskbar can show automatically how much percent of CPU is being used on average by each open process.
- e. The priority of background and/or foreground processes is automatically dynamically increased according to the type of the work the user is doing in the foreground window.
- f. If the user changes the priority by clicking on something on the process window itself, the user is asked if to keep a high priority for this process also when it is in background, or this is the assumed default and the user has to indicate if he wishes otherwise.

06/07/04 Yaron Mayer

13/22

- g. If the user changes the priority by clicking at or near the taskbar then ~~preferably~~ the system assumes automatically that this refers to the process when running in background.

34. (Original) The system of claim 1 wherein at least one of the following features exist regarding resetting the state of the peripheral devices during Reset or during an instant boot:

- a. Peripheral devices can be instantly reset to their original status as it would exist after a normal boot by improving the standard protocol of drivers so that they have a function for instant reset.
- b. Device drivers can instantly query the device to see if it is in a proper state or needs to be reset.
- c. The system constantly updates some area in non-volatile memory or some buffer or stack with the current state of the devices, so that it can be instantly determined if any of the devices was involved in a crash or needs reset.
- d. At least one or more of the devices can be kept in its current state if the user so desires instead of resetting.
- e. During or after the reset the system asks the user if he wants various devices to remain in their previous states, or it is defined as default before any reset is needed and the user can change it.
- f. If any tests or resets are still needed in one or more devices which cannot be done instantly, the system can automatically decide which devices are not critical and can therefore be dealt with in the background after the user can already start working, in a way similar to postponing the disks scan.
- g. When a restore or an instant boot is performed, the image is first reloaded into memory including all the drivers as if they have already checked and/or reset the relevant devices, and then the drivers are instructed to activate the instant actual reset on the actual devices, so

06/07/04 Yaron Mayer

14/22

that the state of the device conforms to the state that the driver is supposed to represent.

- h. The data on the status of any peripheral devices that can be saved in the image includes also any plug and play data for such devices and/or for any other card or relevant elements in the computer, so that no plug and play automatic tests are normally needed during booting.
- i. At least during any boot or reset that is not based on turning off and turning on again the computer (cold boot) the system can automatically identify if it is being reset or rebooted without a cold boot, and if so, it simply uses automatically the plug-and-play solution or configuration that was used last time as saved in the image.
- j. Even if a cold-boot is done, the system can check instantly if the configuration of devices and/or cards and/or other relevant elements has changed or is the same as the last image, and thus avoid any unnecessary plug-and-play checks and instantly choose the configuration used last time.

35. (Currently amended) The system of claim 1 wherein at least one of the following features exist:

- a. The user can define or save the normal task bar itself or parts of it, so that upon any boot it is available again by default.
- b. The user can for define group-icons, which means that a single icon can connect a number of icons so that when the user clicks the group icon a number of applications will open automatically, with or without restoring also their exact arrangement of the desktop.
- c. Clicking with the mouse or any part of the desktop will immediately bring the desktop fully into the foreground so that other windows that cover parts of it move down to the task bar.

06/07/04 Yaron Mayer

15/22

36.(Original) The system of claim 1 wherein in at least one word processor at least one of the following features exist:

- a. New changes after an undo are kept on a separate part or buffer or branch, so that making additional changes from that point on will not overwrite the original "forward" part of in case the user wants to redo it again, and when going again forwards the user is shown the various branches that exist and can choose the appropriate one.
- b. If the user types something by mistake while "overwrite" is pressed when he actually intended to use normal insert mode, the overwritten part is always saved automatically in some buffer and the user can press a button or buttons which instantly restore the lost text as if the mode has been "insert" instead of "overwrite".
- c. The Undo in word processors is also improved so that even deleting the entire contents of the file and saving it is undoable.
- d. There is a file-compare feature that can show exactly the textual differences between two or more files while disregarding irrelevant data such as line breaks and fonts.

37-42 (Canceled).

43.(Currently amended) An Operating System wherein in at least one word processor at least one of the following features exists:

- a. Two files can be merged into a single file with highlighted changes just as if one of the files was created out of the other while keeping the "highlight changes" option to On.
- b. Cut & paste of one file over another file and/or cut & paste of any section over another section when "highlight changes" is set to ON automatically generates the highlighted changes between the two sections as if they were made by actually changing one to the other.
- c. The word processing program behaves consistently with cut & paste where Internet pages are involved, so that if the links are to local

06/07/04 Yaron Mayer

16/22

images then they are automatically inserted into the document file itself, and if they are based on links to the actual Internet then they are included internally in the document and/or are saved as links, and/or the user has a choice about this.

- d. The word processing program remembers automatically in the "Open file" dialogue box and/or in the "Save" dialogue box if the user typed last time a filename (or path) in English or in another language and leaves this as the default for the next time.
- e. The user can undo the last changes even after closing and reopening a file, and this enabled by saving the undo data in the file itself, or by saving it in another local file, so that the original file only contains a link to the associated local undo file.
- f. The word processor program allows the user also options of searching and/or substituting based on style and/or shape and/or size instead of just character strings.
- g. Combining two paragraphs or deleting the empty line between them does not change the fonts or style of the first paragraph, and fonts and/or style in the 2nd paragraph change after connecting it with the 1st paragraph only if the user allows this by default or requests this specifically.
- h. If the user wants to mark large areas with the mouse, while the mouse key is still pressed, the user can use other location commands instead of waiting for the pages to scroll, and then the entire area till the next location becomes marked.
- i. The user can choose a specific font color and/or font attribute, which is kept automatically until changed again, so that this text appears wherever the user adds it to previous text, regardless of the color or other attributes of the previous text where the new text is inserted.
- j. In a word processor URL links are automatically and dynamically broken and restored between the lines as the paragraph changes.

06/07/04 Yaron Mayer

17/22

according to slashes and/or underlines and/or dots and/or other special characters, and when the user presses the link, it is treated as one consecutive link regardless of this automatically changing break between the lines.

44. (Original) A System for improving the efficiency, comfort, and/or reliability in Operating Systems, comprising at least one of:

- a. A mechanism for allowing the user to define at least one User which the system will enter by default and without a password if the user does not request to enter a particular User after a certain time.
- b. A mechanism for allowing the user to define at least one User which the system will enter by default and without a password if the user does not request to enter a particular User after a certain time, and wherein if the system enters the User without password, it enters a limited mode where it takes no commands from the keyboard or mouse or has other limitations until the user enters some password.
- c. A mechanism by which backup software can automatically rename the older versions of the same back-up-files on the backup media with some automatically sequenced extension, so that the user can automatically keep and track also older versions this way.
- d. A mechanism for automatic backup of important files to the default backup directory and/or drive, so that each relevant file that has been created or changed and has not been updated for more than a certain time period, and/or after a certain threshold amount of change even if less time has elapsed, is automatically backed-up on the default back-up media.
- e. A mechanism wherein during each boot the system keeps a log of all successful steps in the boot, and so even if a certain step causes a crash so that the system can't even report the problem, in the next boot the system knows by the incomplete step in the log exactly where it

06/07/04 Yaron Mayer

18/22

crashed the last time and can automatically complete the boot this time without the problematic step and can report to the user exactly what the problem was and/or can automatically remove the problem and/or offer the user to chose among a few possible corrections to the problem.

- f. A mechanism for allowing the user to execute files in DOS mode also by clicking on or near their name instead of having to type it.

45.(Original) The system of claim 43 wherein at least one of the following features exists:

- a. If at least one of two compared files already contains marked changes, a different indication is used between the old changes and the new changes generated by the comparison.
- b. If at least one of two compared files already contains marked changes, a different indication is used between the old changes and the new changes generated by the comparison, and said different indication is by at least one of: Using additional colors, using different special icons and/or marks near the old changes and/or near the new changes, using different special squares and/or other frames around the old and/or the new changes, using special fonts and/or other font characteristics, and marking the old changes are automatically by more faded or less lit colors.
- c. When making file comparisons the system uses various heuristics in order to extract from the document important information about its structure, based on at least one of identifying headlines and identifying other different characteristics of various sections, and uses these cues to try to avoid erroneously mixing between sections.
- d. When comparing files, if the user sees that one or more parts of the documents have not been properly merged, the user can mark the

06/07/04 Yaron Mayer

19/22

problematic section and tell the system to try again to merge more properly the problematic section or sections.

- e. The system allows to compare also more than two files in each step, and so in the merged file of more than files changes that come from different files are marked in different colors or marked differentially by other methods.

46. (Canceled).

47. (Canceled).

48. (Original) The system of claim 1 wherein in statistical packages when correlations or other types of output are displayed for a large number of variables, at least one of the following features exists:

- a. The user can instruct the system to automatically mark for him/her the most significant correlations and/or other result types.
- b. The user can instruct the system to automatically mark for him/her the most significant results, and the criteria for which correlations and/or other result types are sufficiently significant can be at least one of: Some default criteria defined by the user and/or automatically by the system, such as for example only correlations above a certain value and/or significance above a certain value, or the cutting points automatically and/or by user definition can change dynamically according to the results, and/or the best results are marked or displayed according to a certain top percentage.
- c. The user can mark one or more sections of the results so that these automatic marking or statistics will be run only on parts of the results.
- d. The system can report various meta-statistics, wherein said meta-statistics include at least one of: what percent of the correlations are

06/07/04 Yaron Mayer

20/22

beyond certain cutpoints, what is the significance of these meta-results, what number of results was marked out of what total, what percent it is, and what is the chance of having such a meta-results by chance.

- e. The system use more than one type of mark, so that 2 or more levels of significance are marked differently, more conspicuously and/or with different colors.
- f. The system can automatically sort the results according to their value and/or importance and or significance.
- g. Instead of marking correlations or other results, only the relevant results that fit the criteria and/or would have been marked are printed, thus saving paper and time.
- h. Instead of marking correlations or other results, only the relevant results that fit the criteria and/or would have been marked are printed, thus saving paper and time, and this is accompanied by meta-statistics that refer also to the non-printed results.
- i. The system can automatically and/or by user request generate also various graphs for visually displaying said meta-statistics.
- j. For the marking and/or sorting and/or meta-statistics the system can automatically ignore at least one of: All the correlations of variables with themselves, and any other correlations that the user marked as less meaningful and/or that the system can automatically determine as being less meaningful.

49.(Original) The system of claim 48 wherein at least one of the following features exists:

- a. These automatic markings and/or meta-statistics can be applied for each statistical procedure or command separately or for to the entire set of procedures or commands on the same Run.
- b. The system can automatically run the tests also on automatic randomly divided sub-samples, and the number and/or size of the sub-samples is

06/07/04 Yaron Mayer

21/22

determined automatically according to various rules and/or according to various parameters of the actual data.

- c. The correlations (or other statistics results) can also be marked differently and/or displayed in a different section if they are more stable across random sub-sample tests, and/or their sorting can take these stability results also into account.
- d. For defining automatic random sub-samples the user may choose among a number of pre-defined sets of rules or define his own rules, and these definitions can then be applied automatically to any of the normal statistical procedures that are used for that run.

50.(Original) The system of claim 1 wherein at least one of the following features exists in Internet browsers and/or other programs that access the Internet:

- a. The browser can request from the server also to retrieve just a part of an Internet page, as defined by a certain line and/or the value near certain words or areas or fields in the page, and this is supported by the server being able to search also normal web pages and send back just the desired data in response to such a request.
- b. The user can mark a group of links in the history list and/or in the bookmarks list of the browser, and/or in any web page that contains links, so that after the user marks the desired group or groups of links, the browser can automatically open multiple windows so that each window accesses automatically one of the marked links.

51.(Original) The system of claim 1 wherein the speed of the hard disk is increased and/or its power consumption is reduced, by at least one of the following features:

06/07/04 Yaron Mayer

22/22

- a. Adding at least one fork with an additional head to the rotating arms that contain the read/write heads, so the each arm now only needs to move part of the way in order to reach any desired track.
- b. Adding at least one fork with an additional head to the rotating arms that contain the read/write heads, so each arm now only needs to move part of the way in order to reach any desired track, and both heads can read/write data simultaneously, thus increasing also the data transfer rate.
- c. Using at least one stationary arm that reaches more or less the middle track, and carries an additional rotating plate which contains multiple read-write heads, so that considerably less movement is needed to reach any track.
- d. Using at least one stationary arm that reaches more or less the middle track, and carries an additional rotating plate which contains multiple read-write heads, so that considerably less movement is needed to reach any track, and the heads can read/write data simultaneously, thus increasing also the data transfer rate.
- e. Using at least one rotating plate with a hub outside the area of the disk's rotating plates, wherein said plate contains multiple read-write heads, so that considerably less movement is needed to reach any track.
- f. Using at least one rotating plate with a hub outside the area of the disk's rotating plates, wherein the plate contains multiple read-write heads, so that considerably less movement is needed to reach any track, and the heads can read/write data simultaneously, thus increasing also the data transfer rate.